EFFECT OF SUPER ABSORBENT POLYMER COMPOSITE ON COMPRESSIBILITY BEHAVIOUR OF LOW PLASTIC CLAYS

NOOR BALQISH BINTI MOHD DIN

Thesis submitted in fulfillment of the requirements
for the award of the
Bachelor Degree in Civil Engineering

Faculty of Civil Engineering and Earth Resources

UNIVERSITI MALAYSIA PAHANG

JUNE 2017

ABSTRAK

Kaolin diketahui mempunyai kadar plastik yang lebih rendah daripada mana-mana tanah liat yang lain, dan ia biasa ditemui di kawasan di Malaysia. Dalam kajian ini, penggunaan kaolin adalah sesuai kerana ia adalah salah satu daripada tanah liat yang biasa terdapat di Malaysia. Tidak seperti bentonit, kaolin mempunyai pengekalan rendah air menjadikannya tidak begitu komersial dalam pelbagai bidang industri, tetapi ia boleh penyelesaian dengan penambahan SAP, bahan dengan rangkaian hydrophilic yang boleh menyerap dan mengekalkan sejumlah besar air atau larutan akueus. Sifat-sifat fizikal dan kimia dengan atau tanpa SAP telah dikaji dan kandungan SWCC terbentuk. Teknik yang digunakan untuk mendapatkan data yang menggunakan "chilled-mirror dew-point technique". Ujian oedometer juga dijalankan untuk mengetahui lengkung tekanan nisbah ruang. Ia menunjukkan bahawa terdapat potensi dalam meningkatkan keupayaan mengekalkan keupayaan air. Kesimpulannya, SAP dapat membantu kaolin meningkatkan kadar air penyerapan,mampatan tanah dan meningkatkan kadar keplastikan tanah.

ABSTRACT

Kaolinite is known to have lower plasticity than any other clay, and it is commonly found in the area of Malaysia. In this study, the usage of kaolin is appropriate since it is one of the commonly found clay in Malaysia. Unlike bentonite, kaolin has low retention of water makes it less commercial in the various fields of the industry, but it can be solves with addition of Super Absorbent Polymer (SAP); a materials with hydrophilic networks that can absorb and retain huge amounts of water or aqueous solution. The physical and chemical properties with or without SAP were studied and suction-water content Soil-Water Characteristic Curve (SWCC) is formed. The techniques used for obtaining the data is using chilled-mirror dew points techniques. Oedometer test also carried out to know the pressure void ratio curve. It shows that there is a potential in increasing the ability of retaining water ability. In conclusion, SAP able to help kaolinite boost their water rate of absorption then enhance the plasticity of the soils.